



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/525,901

02/24/2005

Takaya Nakabayashi

62940(70904)

9196

21874

7590

04/22/2008

EDWARDS ANGELL PALMER & DODGE LLP

P.O. BOX 55874

BOSTON, MA 02205

EXAMINER

WEDDLE, ALEXANDER MARION

ART UNIT

PAPER NUMBER

4172

MAIL DATE

DELIVERY MODE

04/22/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/525,901	<b>Applicant(s)</b> NAKABAYASHI ET AL.	
	<b>Examiner</b> ALEXANDER WEDDLE	<b>Art Unit</b> 4172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>02/25/2005; 05/18/2005; 10/04/2007</u> .                      | 6) <input type="checkbox"/> Other: ____.                          |



## **DETAILED ACTION**

### ***Status of Application***

1. Claims 1-8 are pending and are ready for examination on the merits.

### ***Information Disclosure Statement***

2. Those foreign patent documents listed in the information disclosure statements through which a strike-out line is drawn were not considered because the documents could not be found.

### ***Specification***

3. The disclosure is objected to because of the following informalities: The specification references to "Table 1" and "Table 2," which are not included in the Specification.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Furusawa (US PG-Pub No. 2002/0151161), a US Patent Application Publication.

The Furusawa patent application, which describes Applicant's invention

recited in claim 1 was filed by another and published under 122(b) before the invention by the Applicant (Application filing date: 06/05/2003).

Furusawa teaches forming a conductive film pattern by dispersing a droplet onto a substrate comprising a lyophilic region and a lyophobic region. When a droplet contacts the surfaces of the substrate described in the prior art, the droplet will make a contact angle with that surface; even though the prior art does not explicitly disclose such contact angles formed between the droplet and the substrate regions, the formation of such angle is a necessary result of practicing the process. Finally, Furusawa teaches treating the surface of a "lyophilic" region, (the substrate is coated with a lyophilic region and a lyophobic region,) so that the droplet will form a conductive pattern, by moving in a predetermined direction, i.e. the direction of the pattern created by the lyophilic and lyophobic regions. Therefore, Applicant's claim 1 reads on the Furusawa patent, which discloses and thereby anticipates every feature of Applicant's invention, either explicitly or implicitly.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 2-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furusawa ('161), because in claiming a pattern formation substrate itself rather than a process of making such pattern formation substrate, Applicant's claims read on prior art substrates on which a pattern is formed; the claims are essentially a product by process. The existence of a pattern-forming substrate in the prior art (see Furusawa), renders the process of making that prior art substrate irrelevant to the claim to the substrate itself.

#### ***Scope and Contents of Prior Art***

Furusawa teaches a substrate on which a pattern is formed. Even if Furusawa had not taught a substrate containing a lyophobic region and a lyophilic region - Furusawa does teach such regions – Furusawa's method nevertheless results in a product which is a pattern formation substrate.

#### ***Difference between Claims and Prior Art***

Applicant's claims 2-8 differ from the prior art in that the prior art does not teach the use of the particular equations (Equations 1 and 2) to determine the width of lines in the formation of the substrate. On the other hand, Furusawa

('161) teaches the use of a first and second lyophobic and lyophilic region (called "hydrophobic" and "hydrophilic" in the translation of the Japanese abstract) to form a substrate with a particular pattern. Furusawa also teaches the resulting substrate upon which a pattern is formed.

### ***One of Ordinary Skill in the Art***

Accordingly, the person of ordinary skill in the art is one who has knowledge of semiconductors, ink jet systems, or surface chemistry, or forming patterns on a surface. A person of ordinary skill in the art would recognize the existence of pattern formation substrates. Such a person may choose from alternative methods to form the substrate, but the final product would be a substrate with a pattern formed upon it according to industrial needs.

### ***TSM***

One of ordinary skill in the art at the time of Applicant's invention would have recognized the existence of such pattern formation substrates and the usefulness of such substrates in making semi-conductors and other products.

Therefore, Applicant's claims 2-8 are rejected because a pattern formation substrate would have been obvious to one of ordinary skill in the art at the time of Applicant's invention.

### ***Double Patenting***

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined

application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 1-8 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 and 6-10 of U.S. Patent No. 7,119,026. Although the conflicting claims are not identical, they are not patentably distinct from each other because a) "lyophobic" and "lyophilic" are interchangeable with "hydrophobic" and "hydrophilic" respectively, and b) the inventions are obvious variants, both using equation (1) as disclosed in '026 patent. The scope and content overlap substantially, since both patents teach how to practice a pattern formation substrate and method for making such substrate by taking advantage of line widths and contact angles between droplets and hydrophilic (lyophilic) and hydrophobic (lyophobic) regions of the substrate through the application of equation (1) (see Application and '026 patent). Merely applying equation (1) to more contact angles and different line widths does not make the invention unobvious; instead, the '026 patent teaches the identical relationship between line width, contact angle and direction of droplet movement



as that disclosed in the Applicant's application with a mere extrapolation to more contact angles and line widths. A person of ordinary skill in the art would therefore have recognized the desirability of applying equation (1) as needed to solve the same problem of causing the droplet to move in a pre-determined direction.

Claim 4 corresponds to claim 2 of the '026 patent; claim 5 corresponds to claim 6 of the '026 patent; claim 6 corresponds to claim 7 of the '026 patent; claim 7 corresponds to claim 8 of the '026 patent; and claim 8 corresponds to claim 9 of the '026 patent.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Masuda (US 7,198,816, April 3, 2007), Marans (US 5,820,029, October 13, 1998), Eiji (JPO 10-078149, October 08, 1999).

9. No claim is allowed.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER WEDDLE whose telephone number is (571) 270-5346. The examiner can normally be reached on Monday-Thursday, 7:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571) 272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. W./  
Examiner, Art Unit 4172  
April 14, 2008

/Vickie Kim/  
Supervisory Patent Examiner, Art Unit 4172